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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/994,475	11/26/2001	Gene Ciancaglini	MAL-002AUS	7235
48102	7590	12/07/2006	EXAMINER	
NETWORK APPLIANCE/BLAKELY 12400 WILSHIRE BLVD SEVENTH FLOOR LOS ANGELES, CA 90025-1030			KIM, DAVID S	
			ART UNIT	PAPER NUMBER
			2613	

DATE MAILED: 12/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/994,475

Applicant(s)

CIANCAGLINI ET AL.

Examiner

David S. Kim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 11 July 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 8-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 8-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### Claim Objections

1. Applicant's compliance with the objection to claim 13 in the previous Office Action (mailed on 11 July 2006) is noted and appreciated. Applicant responded by amending claim 13. Applicant's response overcomes the previous objection, which is presently withdrawn.

### Claim Rejections - 35 USC § 112

2. Applicant's compliance with the rejection of claims 28-30 in the previous Office Action (mailed on 11 July 2006) is noted and appreciated. Applicant responded by amending independent claim 28. Applicant's response overcomes part of the previous rejection. That is, the previous rejection pointed out multiple instances of the phrase, "based on the statistical information". One instance was found in independent claim 28. Another instance was found in dependent claim 30. Applicant removed the instance in independent claim 28 but not the instance in dependent claim 30. Accordingly, Applicant's response overcomes the previous rejection of claims 28-29 but not the previous rejection of claim 30, which is presented again below.

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. **Claim 30** is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In particular, notice the following limitation in claim 30:

"the second control packet specifying a second value corresponding to a second amount of information which the second one of the plurality of nodes can transmit ***based on the statistical information***" (emphasis Examiner's).

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Examiner notes that the supporting language for this limitation is probably from p. 11, l. 11-20 of the specification. Although the specification does disclose (1) periodically polling nodes to obtain statistical information and (2) a control packet specifying a value corresponding to an amount of information which the one of the plurality of nodes can transmit, the specification does not disclose that (2) is ***based on the statistical information*** of (1). Accordingly, the contested limitation above constitutes new matter.

As a remedy, Examiner respectfully suggests simple removal of the phrase “based on the statistical information” from claim 30.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. **Claims 8-26** are rejected under 35 U.S.C. 103(a) as being unpatentable over Modiano et al. (“Design and analysis of an asynchronous WDM local area network using a master/slave scheduler”, hereinafter “Modiano”).

(**claim 8**) Modiano discloses a medium access protocol (MAC) for a WDM LAN (abstract), a scheduler (abstract), a control channel (channel on wavelength  $c$  in Figs. 1-2), a data channel (any suitable channel in Fig. 1), and nodes coupled to the control channel and the data channel (hub and terminals in Fig. 1).

Modiano's MAC also comprises a control message transmitting step (p. 901, col. 2, last paragraph, l. 3-4, the scheduler schedules transmission requests and informs OTs with transmission instructions). This control message specifies one of the nodes as a source node (when a node receives a transmission assignment, this reception indicates that it is a source node for a transmission, p. 901, col. 2, last paragraph). This control message also specifies another one of the nodes as a destination node (e.g., the assignment for queue 1 in Fig. 5 is a transmission assignment for node 1 to transmit to node 3).

After this transmitting step, the MAC comprises a step of waiting (e.g., in the case of unassigned node 3 in queue 3 in Fig. 5, node 3 waits for the next potential assignment; e.g., it is implied that the hub waits at least one slot before sending another transmission assignment to a particular node, p. 901-902, bridging paragraph, otherwise, the node would switch transmission assignments before completing its first assignment) a predetermined period of time related to the value specified in the first control message (e.g., if node 3 is unassigned for one slot, node 3 would wait the duration of that slot for the next potential assignment, p. 904, col. 1; e.g., the hub would wait at least one slot).

Modiano does not expressly disclose that this control message specifies a value that corresponds to an amount of information that the source node can transmit. However, notice that Modiano's nodes are unslotted and unsynchronized (p. 903, col. 1, last paragraph). Also, notice that all of the timing is controlled by the scheduler (p. 903, col. 1, last paragraph). Such timing considerations include when to start transmitting (p. 901, col. 2 – p. 902, col. 1, bridging paragraph). Similarly, at the time the invention was made, it would have been obvious to one of ordinary skill in the art to include when to end transmitting into the timing considerations. One of ordinary skill in the art would have been motivated to do this so that the transmissions of multiple nodes do not "collide". That is, the method of Modiano involves each node transmitting within the limitations of a slot. If a transmitting node does not know when to end transmitting, this node's transmissions may overlap, or "collide", in the next slot with the scheduled transmissions of another node. As Modiano describes slots in terms of amounts of bits (p. 903, col. 2, last paragraph), an obvious way to indicate when to end transmissions would be to provide a

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transmission limit of bits for the source node, which corresponds to the claim limitation of a value that corresponds to an amount of information that the source node can transmit.

Modiano does not expressly disclose that the control message is a packet. However, a packet is one of the most common transmission structures for network communications. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to embody the control message in a packet. One of ordinary skill in the art would have been motivated to do this since the nodes already receive communication through packets (p. 904, col. 2, last paragraph). That is, this implies that the nodes already possess infrastructure for receiving communication through packets.

**(claim 9)** Modiano discloses:

The protocol of Claim 8 further comprising:

receiving the control packet at each of the plurality of nodes in the network (the star in Fig. 1 distributes the control wavelength to all the nodes); and

in response to the source node receiving the control packet, transmitting (p. 901, col. 2, last paragraph) from the source node onto the data channel an amount of information not greater than the amount specified in the control packet (nodes are assigned to transmit an amount corresponding to a slot, e.g., p. 904, col. 2, last paragraph).

**(claim 10)** Modiano discloses:

The protocol of Claim 8 wherein in response to the destination node specified in the control packet receiving the control packet, the destination node monitors (Fig. 2, tunable receivers in destination nodes have to tune to the appropriate wavelength to properly receive from the data channel) the data channel for data following the control packet (control information to transmit during a particular transmission slot is received before the start of the transmission slot, p. 903, col. 1, last paragraph, so reception occurs following the control information).

**(claim 11)** Modiano discloses:

The protocol of Claim 10 wherein the destination node specified in the control packet retrieves the data from the data channel of the network (any suitable channel in Fig. 1).

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**(claim 12)** Modiano discloses:

The protocol of Claim 8 wherein the amount of information specified in the control packet corresponds to a predetermined number of data packets (p. 904, col. 2, last paragraph).

**(claim 13)** Modiano discloses:

The protocol of Claim 9 wherein transmitting the amount of information includes transmitting one or more data packets immediately or after a delay known to both the scheduler and the node (e.g., p. 901-902, bridging paragraph).

**(claim 14)** Modiano discloses:

The protocol of Claim 8 wherein in response to the node to which the control packet is addressed receiving the control packet, immediately or after a delay known to both the scheduler and the node transmitting no more bytes than are permitted by the control packet (transmission is limited to a slot, p. 903, col. 1, last paragraph, p. 904, col. 2, last paragraph).

**(claim 15)** Modiano does not expressly disclose:

The protocol of Claim 9 wherein receiving the control packet at each of the plurality of nodes in the network includes passively tapping the control channel at each of the plurality of nodes in the network to receive the control packet.

However, note the receiver coupling/tapping shown in the nodes in Fig. 2. Such coupling/tapping is conventionally passive.

**(claim 16)** Modiano does not expressly disclose:

The protocol of Claim 8 wherein the *value* in the control packet corresponds to *a number of bytes* the source node can transmit and the predetermined period of time corresponds to the amount of time required for the source node to transmit the *bytes*.

However, limiting transmission is part of the basic functions in a MAC. At the time the invention was made, it would have been obvious to correspond the value in the control packet to a number of bytes. One of ordinary skill in the art would have been motivated to do this to limit the nodes from transmitting more than one slot. That is, transmitting more than one slot could lead to conflicts in transmission

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assignments and reception assignments. Accordingly, the predetermined period of time (duration of a slot) of Modiano would correspond to the time required for the source node to transmit the bytes.

**(claim 17)** Modiano discloses:

The protocol of Claim 14 further comprising dispatching a second control packet after waiting for the predetermined period of time (e.g., in the case of unassigned node 3 in queue 3 in Fig. 5, note that another assignment message will follow for the next slot, p. 904, col. 1).

**(claim 18)** Modiano discloses:

The protocol of Claim 17 wherein at least one of a source node (e.g., queue 3 corresponds to node 3 in Fig. 5) and a destination node specified in the second control packet is different than the source node (e.g., queue 2 corresponds to node 2 in Fig. 5) and the destination node (e.g., assignment of destination node 1 for queue 2 in Fig. 2) specified in the first control packet.

**(claim 19)** Modiano discloses:

The protocol of Claim 8 wherein the control channel and the data channel are carried by the same fiber (any suitable fiber link in Fig. 1) and wherein the control packet on the control channel is "out-of-band" (separate control wavelength  $c$  in Figs. 1-2) from data on the data channel.

**(claim 20)** Modiano discloses:

The protocol of Claim 8 wherein transmitting the control packet includes transmitting the control packet from a headend (hub in Fig. 1) of the network.

**(claim 21)** Modiano discloses:

The protocol of Claim 20 wherein transmitting the control packet from a headend of the network includes the headend dispatching a scheduler allocation message (SAM) (e.g., messages from scheduler in Fig. 1).

**(claim 22)** Modiano discloses:

The protocol of Claim 21 wherein the SAM specifies a source node address (e.g., designation for transmitting node/queue in Fig. 5), a destination node address (e.g., designation for receiving node in Fig. 5), and at least one of: (a) a number of bytes (simply divide the slot size by the size of a byte) the source



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node may transmit to the destination node; and (b) an amount of time in which the source node may transmit (one slot at a time, e.g., p. 904, col. 2, last paragraph).

(**claim 23**) Claim 23 is an apparatus claim that corresponds largely to the method claim 8. Therefore, the recited limitations in method claim 8 read on the corresponding limitations in apparatus claim 23. Claim 23 also includes limitations absent from claim 8. Modiano discloses some of these limitations:

the optical path having a first end and a second (any suitable ends of the optical paths in Fig. 1);  
the time period corresponding to a data transmission time for a node (one slot amount of time, p. 903, col. 1, last paragraph); and

waiting a period of time corresponding to the allotted data transmission time for node prior to releasing another control message (e.g., it is implied that the hub waits at least one slot amount of time before sending another transmission assignment to a particular node, p. 901-902, bridging paragraph, otherwise, the node would switch transmission assignments before completing its first assignment).

Modiano does not expressly disclose:

the control message **processor** and  
the scheduler timing **processor**, in communication with said control message processor, said scheduler timing processor for causing said control message processor to perform said waiting step above.

However, processors are extremely well known in the art for implementing networks, like the network of Modiano. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to implement a control message processor and a scheduler timing processor. One of ordinary skill in the art would have been motivated to do this since computing functions, like the control message function and the scheduler timing function, are conventionally implemented by processors. Accordingly, since the scheduler timing function of Modiano (e.g., p. 903-904, section C) controls the timing of control communication with the nodes, the scheduler timing processor would be in communication with the control message processor and would control the timing of the control message processor, such as the waiting step above.

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**(claim 24)** Modiano does not expressly disclose:

the scheduler authorization message (SAM) *processor*.

However, similar to the treatment of claim 23 above, implement such a processor for the SAM function of Modiano would be obvious.

**(claim 25)** Modiano discloses:

The network of Claim 23 wherein the control and data channels are separate from each other (separate control wavelength  $c$  in Figs. 1-2).

**(claim 26)** Modiano discloses:

The network of Claim 23 wherein the individual data channels and control channels are distinguished by wavelength (different wavelength for data and control channels in Fig. 1).

**(claim 27)** Modiano discloses:

The network of claim 25, wherein the control channel is out-of-band from the data channel (separate control wavelength  $c$  in Figs. 1-2).

8. **Claim 28-29** are rejected under 35 U.S.C. 103(a) as being unpatentable over Modiano as applied to the claims above, and further in view of Gehlhaar et al. (U.S. Patent No. 5,892,916, hereinafter "Gehlhaar").

**(claim 28)** Modiano discloses:

A method comprising:

in response to a request (requests on p. 901, col. 2, last paragraph) from one of a plurality of nodes in a local-area optical wavelength division multiplexed (WDM) network (Fig. 1), transmitting a control packet (p. 901, col. 2, last paragraph, l. 3-4, the scheduler schedules transmission requests and informs OTs with transmission instructions) from a scheduler in the WDM network over a control channel (channel on wavelength  $c$  in Fig. 1) of the WDM network.

Modiano does not expressly disclose:

periodically polling a plurality of nodes in a local-area optical wavelength division multiplexed (WDM) network to obtain statistical information on the plurality of nodes; and

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the control packet specifying a value corresponding to an amount of information which the one of the plurality of nodes can transmit.

Regarding the control packet limitation, notice the treatment of the corresponding limitation in claim 8 above. The argument applied above is applied here to the corresponding control packet limitation.

Regarding the polling limitation, periodically polling a plurality of nodes to obtain statistical information is well known in the art, as shown by Gehlhaar (col. 2, l. 35-57, col. 3, l. 11-12). At the time the invention was made, it would have been obvious to one of ordinary skill in the art to include such polling in the method of Modiano. One of ordinary skill in the art would have been motivated to do this since such statistical information allows one to manage the resources of the network to ensure optimum performance (Gehlhaar, col. 2, l. 35-38).

**(claim 29)** Modiano discloses:

The method of claim 28, further comprising:

waiting a predetermined period of time related to the value specified in the control packet after transmitting the control packet (see the treatment of this limitation in the treatment of claim 8 above).

### **Response to Arguments**

9. Applicant's arguments filed on 22 September 2006 have been fully considered but they are not persuasive. Applicant challenges the obviousness argument provided in the treatment of claim 8 in the previous Office Action (mailed on 11 July 2006, p. 5, 1<sup>st</sup> paragraph). In particular, Applicant contests Examiner's treatment of the following limitation:

"the control packet specifying...a value which corresponds to an amount of information which the source node can transmit" (found in claim 8).

Applicant requests (1) evidentiary support (filed on 22 September 2006, p. 9-10, bridging paragraph) of the facts on which Examiner relies. Applicant also (2) argues against Examiner's motivation of avoiding collision of transmission of data from multiple nodes (filed on 22 September 2006, p. 10, middle paragraph).

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Regarding the (1) evidentiary support and (2) Applicant's argument against Examiner's motivation, consider Ganz et al. ("Time-wavelength assignment algorithms for high performance WDM star based systems", hereinafter "Ganz") and Weik (*Fiber Optics Standard Dictionary*, 3<sup>rd</sup> ed.). Notice that Modiano's scheduler controls the timing of the nodes' transmissions according to time slots (p. 903, col. 1, last paragraph). Weik teaches that time slots are periods of time with a defined beginning and defined ending (Weik, "time slot" on p. 1037). Accordingly, timing considerations in Modiano would obviously include when to begin transmissions and when to end transmissions. Ganz teaches the motivation to keep scheduled transmissions within the finite bounds of appropriate time slots: conflict of resources/collision of transmissions (Ganz, p. 1828, col. 1, last paragraph). With regard to Examiner's standing motivation about collision of data from multiple nodes, notice the scenario of destination conflicts in Ganz. Examiner appreciatively notes Applicant's point about collision avoidance through the use of different wavelengths. However, this point is not persuasive since the use of different wavelengths does not address other types of conflicts/collision (Ganz, p. 1828, col. 1, last paragraph, note the three types of conflicts). That is, one of ordinary skill in the art, in considering the system in Modiano, would have been concerned over collision/conflict of transmission of data from multiple nodes and, thus, would have been motivated to modify Modiano as proposed in the standing rejection.

### Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection (notice the new ground of rejection for claims 28-29) presented in this Office action. Additionally, Applicant's response does not overcome the old grounds of rejection that remain standing and current in this Office Action (notice that claims 8-27 and 30 remain rejected on the same grounds of rejection previously presented in the Office Action mailed on 11 July 2006). Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action

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is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Kim whose telephone number is 571-272-3033. The examiner can normally be reached on Mon.-Fri. 9 AM to 5 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth N. Vanderpuye can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DSK

  
**KENNETH VANDERPUYE**  
**SUPERVISORY PATENT EXAMINER**